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#### Record 1

Serial number TDB0991.0103

Field Name	Contents of Record 1
Size of Record	1762 total bytes in record, 1573 in TX field
Title	Elimination of Surface Debris in Laser Ablation of Polymers.
Publication Date	September, 1991
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Text of Submission	<p>1 p. Disclosed is a process for preventing soot and <b>debris</b> accumulation surrounding laser ablation sites on an organic polymer <b>surface</b> by performing the ablation in helium or hydrogen gases.</p> <p>Organic polymers, such as KAPTON*, undergo efficient photoablation when irradiated by ultraviolet laser pulses of sufficient intensity (such as those from an excimer laser). The ablation process, when performed in air, results in the formation of soot and <b>debris</b> that surround the ablation site. For many applications, a clean <b>surface</b> following laser processing is required. Performing the ablation in low-mass gases, such as helium or hydrogen, at pressures near 1 atmosphere leaves the <b>surface</b> significantly cleaner than what occurs in air.</p> <p>Instead of having to flow the gas over the <b>surface</b> during laser ablation (*), simply immersing the polymer sample in a static chamber containing the gas will provide a clean <b>surface</b>. Further, utilizing the gas at pressures near 1 atmosphere provides a noticeably cleaner <b>surface</b> than that resulting from ablation in vacuum or low pressures. A significant advantage of using a static gas fill for cleaning purposes is that the gas can be slowly recirculated and thus reused. Flowing gas over the polymer <b>surface</b> in air is effective, but leads to increased amounts of needed gas. Additionally, operating at helium or hydrogen pressures of 1 atmosphere eliminates the need for pumping equipment with its added expense. * Trademark of E. I. du Pont de Nemours &amp; Co.</p> <p>Reference (*) Lambda Physik Highlights, No. 24, pp. 5-6, August 1990.</p>
Reference (pointer to work)	IBM TDB n4b 09-91 p233 Order: 91A 62406

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